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ORIGINAL COMMUNICATIONS.

ON LIGATURES: AN ATTEMPT TO DECIDE ON THE BEST MATERIAL FOR THE LIGATION OF ARTERIES.*

WITH EXPERIMENTS.

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"Quod si illa quoque profluvio vincuntur, venæ quæ sanguinem fundant apprehendendæ, circaque id, quod ictum est, duobus locis deligandæ, intercidendæque sunt, ut et in se cœent et nihilominus ora præclusa habeant."—CELSUS, De Re Medicâ, lib. v. cap. 26.

THE plan of this essay comprises a brief sketch of the history of the ligature and its introduction into surgical practice, and an account of the three great classes of ligatures, the *thread*, the *metallic*, and the *animal*. From each class a typical material will be selected for more particular examination and experiment, including *silk* (representing thread), *silver* and *lead* (metallic), and *catgut* (animal ligatures). Finally, an endeavor will be made to indicate which of these substances is best adapted to the wants of the practical surgeon.

HISTORY OF THE LIGATURE.

The practice of surgery previous to the introduction of the ligature presented few inducements to one of tender or fastidious nature. Not the least of its horrors was due to the want of some efficient means of checking hemorrhage. Applications of the actual cautery or some form of the potential cautery, as buttons of vitriol, boiling turpentine, pastes of arsenic, etc., were the principal means employed; but so worthless were they that surgeons feared to perform even unimportant operations, lest death from hemorrhage should result. To avoid this direful termination, injured members were seldom amputated until mortification had ensued, and were then removed by incisions through the dead parts. By some, a large knife, heated to redness, was employed, with the hope that the cauterization would close the vessels as soon as they were divided. Fabricius ab Acquapendente, the tutor of the illustrious Harvey, was in the habit of removing diseased breasts by means of a sharp piece of wood or horn, dipped from time to time in aqua fortis. Guido di Caulico, who flourished at the end of the fourteenth century, amputated limbs by surrounding them with so tight a band that they ultimately dropped off. Well might ancient surgery be termed "a horrid trade."

In the writings of Celsus, who lived in the first century, we find the first mention of the ligature. He gives explicit directions for tying wounded blood-vessels.

The first operation for aneurism was performed by Rufus of Ephesus, about the middle of the second century. The tumor in this case was situated at the bend of the elbow, and had been caused by a wound of the vessel in venesection.

According to Aetius, who wrote in the sixth century, the ligature was sometimes used in cases of wounds and aneurisms. This author gives the first description of what is known as the operation of Antyllus, for the relief of aneurism.

But no evidence exists to show that the ligature was used in any save exceptional cases. That its application to operative procedures, except occasionally in aneurism, was unknown, is proved by the frequent references made to other methods of checking hemorrhage. Indeed, after the time of Aetius, it seems that it was scarcely ever used, even in wounds and aneurisms. In illustration of this fact, it is related that Albucasis, a celebrated Arabian surgeon, who flourished about the beginning of the twelfth century, refused to amputate the hand of a patient, lest he should die of hemorrhage, and that the sufferer, with commendable courage, performed the operation himself, and survived.

In 1564, the immortal Ambrose Paré re-introduced the ligature, which he had been led to use, he thought, "by the speciall favour of the sacred Deitie; for," he continues, "I learnt it not of my maisters, nor of any other, neither have I at any time found it used by any." But the surgeons of that day were too well pleased with their hot irons and their caustics to listen to him. Nor did his defence against the malignant attacks which the publication of his invention called forth, in which he spoke of the brief and unsatisfactory references made to the ligature by the ancients, produce a greater effect. Strange to say, the ligature was not employed at all during the next century and a half, and then we find it commencing a very slow progress. Thus, in 1707, among all the surgeons to the Hôtel-Dieu, Dionis was the only one to employ it. In 1739, Heister, the famous German surgeon, recommended its partial use only; while in England, so late as 1761, Mr. Sharp, surgeon to Guy's Hospital, complained that "the ligature was not received with that universal acceptation one would wish and expect."

Since the ligature has come into general use, it has not been free from the attacks of those seeking to introduce new methods of arresting hemorrhage.

Thus, acupressure, first described in 1859, was intended by its inventor, Sir James Y. Simpson, to supersede the ligature. But the latter has not lost its hold on the confidence of the great majority of surgeons, and acupressure is now used only in rare and exceptional cases.

The systematic twisting of arteries to arrest hemorrhage, technically called torsion, has a few enthusiastic advocates at the present day. First mentioned in the works of Galen, this method was revived by Amussat in 1828, and thoroughly tried by him and other great surgeons of that day. After long experience, the celebrated Velpeau came to the conclusion that it was "not so universally applicable as the ligature, and in no case did it possess any advantage over it." It is possible that torsion may come into frequent use as a means of checking hem-

* An Inaugural Essay for the degree of M.D. in the University of Pennsylvania, to which the Alumni Prize was awarded at the Commencement held March 12, 1874.

orrhage from the smaller arteries after operations; but as applied to the larger arteries it is generally considered untrustworthy, while the fact that it causes sloughing of the portion of the vessel twisted removes much of its claims to superiority over the ligature. One great objection to torsion consists in the difficulty of performing it. Thus, Prof. Agnew states that he has seen Mr. Thomas Bryant, of London, spend ten minutes in twisting a single vessel;* while Billroth,† of Vienna, frankly states that he has entirely failed in attempts at torsion in cases of excision of the breast, and that, in his hands, secondary hemorrhage was on one occasion the consequence of unskilful torsion of the posterior tibial artery.

It is unnecessary in this connection to enter into a detailed description of the numerous instruments that have been brought forward with the intention of supplanting the ligature to a greater or less extent. Among them are Assalini's compressor, Nunneley's forceps, Richardson's tubular compressor, etc. The artery-constrictor of Dr. S. Fleet Speir seems to be the most ingenious and reliable of these contrivances; but even this has not obtained any great degree of favor among surgeons.

Although all of the above methods of preventing hemorrhage or obliterating arteries have advocates here and there in the ranks of the profession, yet it cannot be gainsaid that the ligature, from its great safety and the ease with which it can be applied, deserves its place as practically the best hemostatic that has yet been invented.

CHANGES WHICH ENSUE IN AN ARTERY AFTER LIGATION.

A. *Ligation of an Artery in its Continuity.*

I. When a thread is applied firmly to an artery—

(1.) The internal and middle coats are divided as if by a sharp knife. The external tough fibrous coat is puckered, and its surfaces internally made to touch each other; in this position it serves to keep the edges of the divided coats in contact. The vasa vasorum of the external coat are obliterated by the pressure of the ligature, and the constricted ring of tissue, therefore, deprived of nourishment.‡

(2.) Lymph is poured out from the edges of the divided coats above and below the ligature, and they become firmly adherent.§ On this is deposited, in the cardiac cul-de-sac, fibrin from the blood, which rapidly grows until it forms a conical mass, reaching to the first branch given off; it does not at first adhere to the sides of the vessel, but merely by its base to the button of lymph. In the distal cul-de-sac of the vessel, as a rule, no coagulum is formed; nor is the deposit of lymph in this situation so great.‖ Lymph is poured out from the external coat and the sheath of the vessel, forming a mass which envelops the noose and knot of the ligature.

(3.) The constricted portion of the external coat ulcerates, or sometimes separates in the form of a minute slough, and, together with the ligature, is gradually extended through a minute orifice in the capsule of lymph enclosing the ends of the vessel.¶ The place of the cast-off portion is filled in with lymph, so that dissection does not reveal any break in the continuity of the cord.**

(4.) The coagulum becomes adherent to the internal surface of the vessel, and undergoes organization, causing the arterial tube to be obstructed up to its first branch.

(5.) Absorption takes place, and after an interval of two or three months nothing remains of the vessel, from the point ligated to the first branch given off on the cardiac side, but a fibrous cord.

(6.) A small tortuous canal, uniting the ends of the artery, becomes developed in the centre of the fibrous cord.

This curious fact was first pointed out by Maunoir, of Geneva. He applied two ligatures to the carotid artery of a fox, and divided it between them: on

* Lecture on Hemorrhage, Course 72–73, at University of Pennsylvania.

† Schmidt's Jahrbücher, No. 4, 1872.

‡ Bell compares the constricted external coat to a strangulated portion of intestine. Principles of Surgery, vol. i. p. 220.

§ *Adhesion of the Divided Coats.*—The union between the edges of the divided coats is often found to be quite firm in experiments on the lower animals twenty-four hours after ligation (Jones on "The Processes employed by Nature in suppressing the Hemorrhage from Divided and Wounded Arteries." London, 1805, p. 140). That firm union sometimes takes place in as short a time in man, is proved by the results of the temporary ligature, which will be discussed in a succeeding page.

That the adhesive inflammation of the divided coats is the most important portion of the process is demonstrated by the experiments of Jones. In many cases, after the ligature had separated, the artery was found entirely destitute of coagulum. Thus, in describing the appearances forty-nine days after ligation, he says, "The tunics of the artery were remarkably thick, but there was no coagulum within it." (*Op. cit.*, p. 155.) In many cases where the coagulum did exist, it was non-adherent, and, therefore, useless in preventing hemorrhage, as in Exp. IX., p. 148, where the animal was killed nineteen days after the application of a ligature, and, on examination, the artery was found to be obliterated by lymph, and containing "a black coagulum, which did not adhere to its internal surface."

‖ *Changes in the Distal Cul-de-sac of a Ligated Artery.*—"In the distal cul-de-sac of the artery, I have never seen any very distinct coagulum formed either in the human subject or in dogs on which I have experimented, but merely small detached fragments of coagula and some plastic effusion." (Erichsen's System of Surgery, vol. i. p. 254.) That secondary hemorrhage occurs most commonly from the distal extremity, does not show the importance of the clot, but of the adhesive inflammation of the internal coats, which is more apt to be imperfect in that situation. Were the absence of the clot the cause of hemorrhage, that accident would occur in nearly every case of ligation in the continuity of an artery; for, as we have seen, in nearly every case the clot is absent. Farther on will be noticed Porta's experiments on the "slack ligature," which also tend to prove the same assertion; since he found that hemorrhage with this kind of ligature was very common, no opportunity being allowed the internal coats to take on adhesive action; while with the ordinary tight ligature hemorrhage was unknown. The very shape of the clot shows that it is not designed for the prevention of hemorrhage. It is generally conical, and does not touch the sides of the vessel for a long interval,—not till the vessel is beginning to contract in calibre.

¶ *Division of the External Coat.*—"The ligature divides the internal and middle, but only compresses the outer coat. It makes a slough of a little piece of the latter, and when it comes away, at the end of ten days or a fortnight, you find the slough in it." Brodie's Lectures on Surgery, p. 306.

A ligature takes from ten days (brachial artery) to twenty-one days (common iliac) to separate. Hence, as a general rule, sufficient time is afforded nature by the internal inflammatory changes, to glue the edges of the vessel together, and, by the external formation of a capsule, to form a splint to press them together, and thus occlude the artery and prevent hemorrhage.

** Mr. Jones's description of the changes in the ligated artery is so graphic that a portion is subjoined: "The formation of the coagulum is of little consequence; for, soon after the application of the ligature, the extremity of the artery begins to inflame, and the wounded internal surface of its canal, being kept in close contact by the ligature, adheres, and converts this portion of the artery into an impervious and, at first, slightly conical sac. It seems to be entirely owing to the effusion of lymph, by which this adhesion is effected, that the coagulum of blood formed within the artery is sometimes found adhering by a small portion of its *base* to the extremity of the artery. But whilst the adhesion of the internal parietes of the artery is accomplished, a considerable quantity of lymph is effused between its coats and among the parts surrounding its extremity, so that in a very short time the extremity of the artery is enveloped in lymph, and covered with a layer of it, just as we have seen the punctured artery to be. After a short time the ligature occasions ulceration of the part, around which it is immediately applied, and, acting as a tent, a small aperture is formed in the layer of lymph effused over the artery. Through this aperture a small quantity of pus is discharged, as long as the ligature remains, and finally the ligature itself also escapes, and the little cavity which it has occasioned granulates and fills up, and the external wound heals in the usual manner." Pp. 160–161.

examining the parts, a long time afterwards, he found "a very small vessel, a millimetre in diameter," joining the extremities of the artery.* Mr. Jones cast a great deal of ridicule on this observation, but it has been fully confirmed by Stilling and Porta, the latter giving a beautiful illustration of the "direct anastomosing vessels."†

The quantity of pus formed around the artery when the process of closure takes place in the most healthy condition of the tissues, is very small. Indeed, suppuration may be entirely absent, the strangulated portion being absorbed, as sometimes happened when it was the custom to cut the ligature short and leave it in the wound. On the other hand, pus, instead of lymph, may be poured out around the vessel at the point of ligation, and the ends of the artery lie bare in the cavity of an abscess. In such an event, secondary hemorrhage is sure to occur, if, coincidently, the internal closing process is defective, or if the presence of the abscess around the vessel leads to such an interference with the nutrition of its walls as to cause ulceration.

If, however, the patient survives, the cavity of the abscess becomes studded with granulations, and gradually heals, as in ordinary cases.

II. When a thread is applied to an artery with sufficient firmness merely to stop pulsation, the internal and middle coats are not divided primarily. A clot forms at the point, and becomes adherent to the internal coat. The *vasa vasorum* at the constricted point being obliterated, the ligature slowly ulcerates through. Should the clot be imperfect, hemorrhage will occur, since the adhesion of the internal coats is much more apt to be deficient than when the ligature is applied tightly. If the thread is drawn tightly enough merely to diminish the calibre of the artery one-half or two-thirds, the artery may remain pervious, or a clot may form, and, becoming adherent to the walls of the vessel, undergo organization. The ligature then ulcerates through the walls of the vessel and the clot, and is cast off.

These methods of tying arteries are particularly objectionable, since almost the whole burden of occluding the vessel is thrown on the coagulum. Should the ligature ulcerate through the vessel before the clot has become firmly adherent, hemorrhage is the inevitable result.

The truth of this inference has been demonstrated on animals, and *a fortiori* must, therefore, apply to man; since, as is well known, secondary hemorrhage after experiment on animals, with the simplest precaution, very rarely or never occurs.

Porta performed seventy experiments to determine the value of the loose or slack ligature. In one-half of the cases the artery was closed by the formation of a clot, the exudation of lymph, or slow contraction from thickening of the external coat. In most of the remaining experiments the artery remained pervious, with little or no alteration in its coats. In a few instances the walls became ulcerated or eroded, and fatal hemorrhage occurred.‡

B. *Changes which occur after the Ligation of an Artery at its Extremity.*

When a ligature is applied to the extremity of an arterial tube (as in cases of amputation), the same processes occur on the cardiac side of the ligature as when an artery is tied in its continuity. The external capsule of lymph does not envelop the ligature so completely. That portion of the vessel within and beyond the noose of the ligature perishes, and is extruded from the wound either in the form of a slough or a purulent discharge.

FIRST CLASS OF LIGATURES: THREADS.

Threads of various composition have been employed in tying arteries ever since ligatures were introduced. Flax, hemp, and cotton were formerly employed; but silk has taken their place in modern times, though the surgeon does not hesitate to resort to the former materials when the latter is not at hand. All of these substances exert the same influence on the animal tissues.

Thus, Porta made *sixty* experiments on the arteries of various lower animals with linen and hempen ligatures. In only *four* cases were abscesses produced. At the end of two years the ligatures had been absorbed in *ten* cases, while in most of the remaining, changes had occurred indicating the progress of absorption. The action of silk ligatures was very similar to that of other threads, as will be more fully explained shortly.§

A great variety of plans have been pursued in applying threads to arteries.

Paré used a strong double ligature, and did not scruple to include "some portion of the neighboring parts," as the vein and nerve.

Hunter in his first operation for aneurism, in 1785, tied the femoral artery with four separate ligatures drawn tight enough to bring the sides of the vessel in contact, and left the ends hanging from the wound, which he closed with adhesive plaster. After the occurrence of secondary hemorrhage, which was checked by the tourniquet, the wound healed, but abscesses continued to form, and pieces of ligature to be discharged, for six months afterwards. In his second case he tied both artery and vein with a single strong ligature, and dressed the wound from the bottom; the man died of secondary hemorrhage. After this he tied the artery alone with a single strong thread, and endeavored to heal the wound as rapidly as possible.

The subject of temporary ligatures is not devoid of interest. Some experiments by Mr. Jones led him to infer that an artery will become obliterated if its internal coats are divided in several places by the momentary application of ligatures. Mr. A. C. Hutchinson found the same result ensue when only a single division of the coats was made; but this was not confirmed by Hodgson and Dalrymple, who repeated his experiments. It occurred

* "Mémoires sur l'Anévrisme et la Ligature," Génève, 1802.
† "On the Pathological Alterations of Arteries by Ligature and Torsion," Milan, 1845.
‡ British and Foreign Medical Review, July, 1846, p. 97.
§ *Op. cit.*, p. 92.

to Mr. Travers that the cause of these failures was from the divided coats not being kept long enough in contact to insure adhesion. To test this theory he made eleven experiments on the carotids of horses and asses, leaving the ligature *in situ* from one to twenty-four hours, and in nearly every instance succeeded in obtaining obliteration of the artery by "albuminous or sanguinous coagulum." Long afterwards, Porta repeated Mr. Hutchinson's experiments, but with a different result: out of seventy-four cases in which the ligature was left *in situ* from one minute to twelve hours, he obtained obstruction of the vessel in only *fourteen* instances.

In 1817, Travers put his plan into practice in treating some cases of aneurism. In one case, the brachial was constricted for fifty hours with perfect success. In another instance, a ligature was left on the femoral twenty-seven hours, but pulsation recurred, and the ordinary operation was resorted to with success. In a third case, the attempt to use the temporary ligature resulted disastrously: Mr. Travers applied a ligature to the femoral for aneurism of the posterior tibial, and attempted to remove it on the third day, but found it impossible. Hemorrhage occurred, and on the fifth day another ligature was applied. Death ensued in a few days from a recurrence of the hemorrhage.*

Sir Astley Cooper, in a case of popliteal aneurism, applied a ligature to the femoral, and withdrew it in thirty-two hours; pulsation recurring, the thread was re-applied for forty hours. Hemorrhage now ensued to such an extent that it was necessary to employ the ordinary ligature. In a similar case in which Hutchinson applied two ligatures one-fourth inch apart, and withdrew them in six hours, pulsation returned; two more ligatures were applied; hemorrhage followed, amputation was performed, and the man died.

Considering the discouraging results obtained by the use of the temporary ligature, an attempt to revive it would scarcely be deemed wise. Yet such an attempt was made by Drs. Peters, Buck, and others, of New York, in 1868, but without success.

Scarpa† employed in cases of aneurism a species of temporary ligature which has been termed the *mediate ligature*. He used a cord composed of five or six threads, and placed a piece of linen between it and the vessel; the whole was removed in three or four days. This formidable procedure led to profuse suppuration, and other bad results, and it is not likely to be resuscitated.

Porta made eighty-five experiments with the mediate ligature. In twenty-four of these the artery was found pervious; in forty-five, closed either by plug (thirty-four cases) or lymph (eleven cases); and in sixteen, divided in two. Consequently it may be seen that with this method it is not even certain that the vessel will become obliterated.

The method pursued by Tenon, Abernethy, and others for the cure of aneurism, which consists in tying the artery in two places and dividing it between them, has nothing to recommend it. According to Porta, it is a dangerous method. In forty-five experiments to determine its value, hemorrhage from corrosion of the cardiac extremity occurred in three,—a result which was never seen after the common ligature.‡

The ligature of reserve, which consists of a loose thread placed above one applied in the ordinary manner, was much in vogue with English surgeons during the first quarter of the present century. This method necessitated the stripping of the vessel from its connections to a dangerous extent, and thus invited the very accident which it was designed to avoid,—secondary hemorrhage.

The plan of cutting both ends of the ligature short and burying it in the wound will be considered in the next section.

Veitch, of Edinburgh, in 1803, was the first to employ the modern method of applying the ligature, which consists in tying the vessel firmly with a single silk thread of moderate thickness, cutting one end close to the knot, and leaving the other hanging from the wound.

SILK LIGATURES.

Although silk, strictly speaking, is an animal substance, yet its action on the tissues is exactly similar to that of threads of other materials, and it has therefore been placed among thread ligatures, of which it may be taken as the type.

Experiments on Animals.

Where it is not otherwise stated in the following experiments, the ligatures were drawn firmly so as to divide the internal coats, the ends cut short, and the wounds closed by adhesive plaster or sutures.

Levert, of Alabama, in 1828, made some experiments with silk in order to compare its effects with those of metallic ligatures. They are not important; but, as the paper which contains the account has attracted much attention, they will be briefly given:

1. The humeral artery of a dog was surrounded with a single strand of waxed silk, drawn barely tight enough to bring the sides of the vessel in contact. On the fourteenth day a dissection of the parts was made, and the ligature found loose in the centre of a small abscess. The vessel had been ulcerated through, and its ends were separated a short distance.

2. The femoral of a dog was tied in the same manner. On the seventeenth day the ligature was found loose in a small abscess.§

Simpson briefly stated that he has repeated Levert's experiments and obtained identical results. He also states that in numerous instances in which he has inserted pieces of silk in the muscles of the lower animals suppuration has always ensued.‖

Porta, in his elaborate work, gives the details of numerous experiments on the arteries of dogs, sheep, goats, calves, horses, asses, and rabbits. In nineteen out of one hundred and twenty experiments, the ligatures had disappeared by absorption at the end of two years. Most of those remaining had undergone changes indicating the progress of absorption. Some

* Med.-Chir. Trans., vol. vii.
† On Aneurisms, 1817.

‡ *Op. cit.*, p. 98.
§ Amer. Jour. Med. Sci., vol. iv., 1829, p. 17.
‖ Simpson on Acupressure, Appendix.

became encysted *in situ* around the remains of the arteries; some were lying bare in the layers of cellular tissue; and a few had caused suppuration and been thrown off. Compared with catgut, silk produced more irritation and excited suppuration more frequently. Compared with linen and hempen threads, no difference was discovered in the results produced.

Lister, in 1869, made the following experiment:

The carotid of a horse was tied with a piece of purse silk which had been saturated in a strong watery solution of carbolic acid. The wound, which was dressed antiseptically, healed by first intention. On dissection, six weeks afterwards, the ligature was found encysted at the point of application; it had not cut through the vessel.*

There is nothing peculiar in the results of this experiment, as will be seen by a glance at those of Porta.

Howard tied the carotid of a sheep with silk, diminishing the calibre of the vessel one-half. He stitched the free end of the ligature to the integument. In twenty-three days he found the entire ligature hanging to the integument. The artery was obliterated, though no signs existed that it had been divided. It was surrounded by a mass of lymph; no pus was present.†

Experiments of the Writer.

Exp. I.—A coil composed of eighteen inches of saddler's silk was placed in the abdominal cavity of a cat, and the wound closed by silk sutures. The orifice healed by first intention. In twenty days the animal was killed, and the parts examined. The sutures were in place. The coil of silk was found in a capsule formed by the adhesion of the omentum to the abdominal walls. No pus existed.

Exp. II.—The flexor muscles of the thigh of a cat were surrounded subcutaneously with saddler's silk. No disturbance ensued. On examination, twenty days after, the silk was *in situ*, having caused no apparent change in the contiguous tissues.

Exp. III.—A piece of silk, one foot long, was placed beneath the integument of the shoulder of a cat, and the incision closed with silk sutures; it healed by adhesion. Six days afterwards the silk was found *in situ*, surrounded by a thin film of organized lymph.

Exp. IV.—The above experiment was repeated, with identical results.

Exp. V.—The abdominal aorta of a cat was tied with saddler's silk, and the inguinal wound closed by silk sutures. Union by adhesion occurred, but a large fluctuating tumor formed in the groin. In five days the animal was killed. The ligature was found *in situ*, and the parts around it healed. The pelvic cavity contained a large circumscribed abscess, the result of the dissection necessary in reaching the aorta.

Exp. VI.—The brachial of a goat was tied with sewing-silk. Silk sutures were used. Wound healed by adhesion. In fourteen days the ligature was found in place around artery, surrounded by organized lymph.

Exp. VII.—The carotid of a goat was tied with a single thread of saddler's silk, and three-fourths of an inch farther up with a threefold cord of the same material; sutures of silk were used; the wound healed by adhesion. In thirty-two days the animal, which had been sickly, died. Both ligatures were found encapsulated; the smaller surrounded the remains of the artery, the larger had nearly divided it. No pus was present. This experiment is an imitation of one by Lister with carbolized catgut, which will be detailed hereafter.

Exp. VIII.—The carotid of a cat was tied at one point with silk, and at another, one-half inch above, with catgut (non-carbolized). The wound was drawn together by fine silk sutures; it healed by first intention. In sixteen days the parts were examined; the silk was encapsulated, and had nearly divided the vessel; the catgut was also encapsulated; it was very much softened, and partly absorbed. The artery presented no appearance to indicate that it was undergoing division at this point.

Exp. IX.—The carotid of a large dog was tied at one point with lead wire (drawn firmly), and one inch above, with silk. The wound was drawn together with silken suture; but it was slow in healing, on account of the constant efforts which the animal made to irritate it. On examination, in forty-two days, the artery was found obliterated between the points of ligation. No traces of either ligature could be found.

RESULTS OF THE USE OF SILK LIGATURES ON MAN.

1. *The Short Silk Ligatures.*—A remarkable series of observations on this subject was commenced about 1786, and terminated (by Mr. Lister) in 1869. I refer to the method of tying arteries firmly with silk thread, cutting the ends short, and endeavoring to heal the wound by first intention.

The results of the first cases in which this was tried are given in a letter written by Mr. Haire, of England, in 1786:

"By following this plan we have seen stumps healed in the course of ten days. The short ligature thus left in commonly made its way out by a small opening in a short time, without any trouble or the patient being sensible of pain."‡

Hennen, in 1813, tried the short ligature in many cases of amputation. Some of the ligatures came away with the dressings, some made their appearance in small pustules which formed on the surface of the stump, and a few never came to the surface.§

In 1814 Lawrence published his experience. He used a very fine variety of silk, and found that the ligatures came away with the discharges; or when the wound healed by first intention they came away with trifling suppuration, or occasionally remained. He applied the short ligature to the treatment of aneurisms, but after prolonged experience came to the conclusion that it generally caused suppuration, and abandoned it altogether.

Guthrie, and other eminent surgeons, after similar experience, came to the same conclusion.

Occasionally, after a ligature was left in the tissues the wound healed, and it was extruded in a very curious manner, without suppuration, as in the following case:

The brachial artery was tied for aneurism. The wound healed in thirty-nine days. On the sixty-second day a small tubercle which had been felt in the centre of the cicatrix for some time made its appearance above the skin. It was found to contain the ligature. No suppuration or discharge of any kind occurred.‖

Sometimes the ligature remained permanently encysted, as in the following case:

* Lancet, April 3, 1869, p. 451.
† Trans. Amer. Med. Assoc., 1872.

‡ London Med. Jour., vol. vii.
§ Military Surgery, p. 75.
‖ Cooper's Surg. Dict., art. "Ligature."

The external iliac was tied for popliteal aneurism. The man died in five months, and on dissection the ligature was found lying close to the artery in a small cyst, something like an inguinal gland.*

Lizars gives an instance where the subclavian was tied for axillary aneurism, with flax thread cut short. The wound healed completely by the third day, and nothing was ever seen of the ligature.†

Carwardine tied the femoral for popliteal aneurism with a short ligature of fine silk. The wound united by first intention, without the formation of a drop of pus, and nothing was ever seen of the ligature.‡

Porta considers that in rare cases a silk ligature is absorbed, as not infrequently happens in animals.

Lister, in 1869, published the following case. The left external iliac was tied for aneurism of the femoral, in a lady aged 51. Silk thread which had been soaked in carbolic acid was used, and the ends of the ligature cut short. Under antiseptic treatment, the wound healed completely in four days. The patient died in ten months of aneurism of the aorta. On dissection, a small capsule was found attached to the fibrous remains of the ligated artery. It contained the knot of the ligature, some disintegrated fibres of its noose (showing that partial absorption had occurred), together with a minute quantity of semi-fluid pus.§

To conclude: When a silk ligature is buried in the tissues, and the wound heals over it, it is either

Extruded with suppuration;

Extruded without suppuration; or, in some cases,

Encysted.

2. *Silk Ligatures in the Abdominal Cavity.*—It might be supposed that silk would not be tolerated in contact with so sensitive a membrane as the peritoneum, but that its presence would inevitably lead to suppuration. Experience, however, has proved the contrary to be the case.

Peaslee, who has obtained at least average good results in ovariotomy, has long been in the habit of ligating the pedicle and all bleeding vessels with silk ligatures, and closing the incision over them. Except in very rare cases, in which he has seen abscesses form and the ligatures come away, he has found this method perfectly safe. In one case he applied fifteen ligatures to bleeding vessels, and no disturbance ensued.‖

Keith, of Edinburgh, has also used silk ligatures in similar cases. In one instance he applied thirty short silk ligatures, and the patient made a good recovery, the ligatures never making their appearance.¶

In one case in which the pedicle of an ovarian tumor was tied with silk, death took place on the seventeenth day from exhaustion. On examination, evidence of very slight peritonitis existed. "The pedicle of the tumor was atrophied, but no slough had occurred. The ligature around the largest portion of the stump had nearly slipped off. The other was still *in situ*, and covered by an exudation already somewhat organized."**

From this autopsy we may infer that the ligatures in these cases became encysted.

3. *Results when the Silk Ligature is applied after the Modern Method.*—When an artery is tied in its continuity, the wound frequently heals by first intention, leaving a small orifice for the transmission of the thread, through which a few drops of pus are discharged.†† After a variable period the ligature comes away, and, the artery having become consolidated by the processes already described, all risk of hemorrhage is obviated.

Although statistics cannot be cited on this point, yet it may be received as the result of practical experience, that the presence of the thread does not interfere materially with the healing of the wound, and, consequently, that the use of silk ligatures is not productive of pyæmia.

As secondary hemorrhage has been asserted to occur more frequently after the use of silk than after the use of animal ligatures, it behooves us to inquire into the frequency of this accident, in order that in the proper place the truth of such assertion may be examined into.

The following statistics, although they are the best that can be obtained, afford scarcely a fair view of the subject, for in many of the cases the method of Scarpa and other dangerous procedures were employed, and indeed it is believed that in comparatively few instances has the modern rule of disturbing the connections of the vessel as slightly as possible been followed. Moreover, scattered here and there among the cases are instances in which other besides silk ligatures have been used.

Table of Ligation of Arteries in their Continuity.

Total number of cases.	Vessels tied.	Number of cases of secondary hemorrhage.	Number of cases dying of secondary hemorrhage.	No. dying from all causes.
a 600	All the arteries.	75, or 12½ per cent.	30, or 5 per cent.	168
b 69	Subclavian.	14, or 20 per cent.	9, or 13 per cent.	33
c 167	Carotid.	21, or 12½ per cent.	14, or 8⅓ per cent.	56
d 118	External iliac.	14, or 12 per cent.	6, or 5 per cent.	33
e 204	Femoral.	22, or 11 per cent.	6, or 3 per cent.	50
f 31	Primitive iliac.	5, or 16 per cent.	5, or 16 per cent.	24

a Porta, *op. cit.*
b Norris, Am. Jour. Med. Sci., July, 1845.
c Norris, *ibid.*
d Norris, *ibid.*, Jan. 1847.
e Norris, *ibid.*, Oct. 1849.
f S. Smith, *ibid.*, July, 1860. Crampton's case, in which catgut was used, has been omitted, as it will be included in another table.

Death is said to have occurred from pyæmia in seven of the above cases: six of Porta's cases (tabes purulenta), and one of Norris's cases of ligation of the carotid (purulent absorption).

In amputations, secondary hemorrhage is of very rare occurrence. Out of three hundred cases (in most of which the silk ligature was used) death was caused by this accident in only five cases (1.66 per cent).‡‡

Holmes, as the result of an examination of another

* Porta, *op. cit.*, p. 32.
† Lancet, Aug. 31, 1872, p. 288.
‡ Cooper's Surg. Dict., art. Aneurism.
§ Lancet, April 3, 1869, p. 452.
‖ Peaslee on Ovarian Tumors, p. 430.
¶ Edin. Med. Jour., Dec. 1867, p. 525.
** "Two Cases of Ovariotomy." Peaslee, Amer. Jour. Med. Sciences, 1865, p. 77.

†† "The parts indeed frequently, if not generally, unite by first intention, and if there is any suppuration it is generally at the seat of the ligature." Syst. of Surg., S. D. Gross, vol. i. p. 726.
‡‡ Bryant, Med.-Chir. Trans., vol. xlii. pp. 85–90.

series of three hundred cases, says, "Secondary hemorrhage is hardly ever a cause of death, except in persons with diseased arteries."*

Pyæmia, on the other hand, is a very common cause of death. Thus, of Bryant's three hundred cases, thirty, or ten per cent., perished of this disease. But there is no reason to suppose that the material of the ligature had anything to do with this mortality.

(To be continued.)

THREE RARE SURGICAL CASES.

BY CHARLES B. NANCREDE, M.D.,

Assistant-Surgeon to the Protestant Episcopal Hospital.

CASE I. A Rupture of the Biceps Flexor Cubiti.—An elderly man, about 60 years of age, came to me at the Protestant Episcopal Hospital during the summer of 1871, complaining of an injury to his arm and shoulder, caused by a fall from his cart. On examining him, I found a singular condition of the biceps of one arm, as if part of its belly were gone, which the man himself had noticed, saying that after the fall his "muscle had gone up his arm." As the accident had occurred some days before, there seemed nothing to be done, especially as he suffered no inconvenience beyond weakness. I concluded at the time that, from making a violent muscular effort to save himself, one head, probably the long one, had been ruptured.

In placing this case on record, I must apologize for the imperfection of the notes; but, as Dr. S. Ashhurst has shown, in the *Philadelphia Medical Times* for January 11, 1873, how rare such accidents are, I thought it worth reporting, even from memory. Dr. Ashhurst, in the above-mentioned paper, states that only one other case besides his own has been put on record, viz., one by Mr. South,† which he also relates from memory.

Case II. Fracture of a Rib by Muscular Violence.—Thomas ——, an Englishman, aged 44 years, a gardener by occupation, came to me at the Protestant Episcopal Hospital during the summer of 1873, saying that he had "strained himself" about ten days before, while trying to straighten a scythe-blade, which he held down with one hand, while, seizing the end with a monkey-wrench, he pulled upwards with the other. At first this had not given him much trouble, but the pain had increased until it demanded attention. He was a singularly healthy, vigorous man, never having had any other fracture, and of perfectly regular habits. Much to my surprise, on examining him, I readily detected bony crepitus, etc., at about two and a half inches from the sternum, on the second rib. The crepitus was so marked that without any difficulty two or three other gentlemen, who were present, confirmed the diagnosis. He was treated by adhesive straps, etc., and did well.

This case has proved unique so far as I have been able to ascertain by reading or inquiry. Malgaigne has collected eight cases due to muscular violence, but thinks that in all of them there was atrophic thinning. They were reported by Gooch, Monteggia, Graves, C. Broussais, Nankivel, and one occurred at the Hôpital Necker. Four occurred in men, and four in women. The age is given in six: five were in persons between forty-seven and sixty-three years of age, the sixth being a young man. He says that in seven cases the cause was a severe effort at coughing. In M. Broussais' case the patient had chronic pneumonia and eccentric hypertrophy of the heart, to which latter M. Malgaigne is inclined to attribute some influence, as the fracture occupied the fourth true rib at the junction of its anterior fourth with the rest of the bone. In all these cases the seat of lesion was in the anterior half, near the cartilages. He also says, "What is not less remarkable is that so far no instance has been known of such a fracture occurring on the right side. In the cases hitherto known, the ribs involved have been the fourth, fifth, and sixth, then the ninth, tenth, and eleventh, the seventh and eighth being exempt. Generally but one rib is affected; once only the fracture occurred simultaneously in the fifth and sixth; and in the curious case at the Hôpital Necker there took place in less than one month three successive fractures, affecting first the tenth, then the ninth, and lastly the eleventh rib. On the whole, the tenth seems to be the rib most exposed."‡ Now, in my case, the fracture was that of the *second* rib of the *right side*.

Malgaigne thinks these cases were due to muscular action, which in coughing produces the fracture by approximating the sternum and spinal column, just as external pressure does. Whether this is the explanation of the mechanism in my case I am not prepared to say, although the effort, as the patient described it, *would* tend slightly to approximate the anterior and posterior walls of the chest on one side —the side of tension,—and *expand* it on the other side,—that of prehension.

It might be urged that this was a fracture of an ossified cartilage; but I think not, although it was very near the junction; besides, the patient's age is against this, he being only forty-four years old, with no signs of premature decay—indeed, the reverse. The crepitus was such as could only have been produced by a cartilage as calcareous as bone itself.

Case III. A Luxation of the Lower End of the Ulna forwards. — Eliza Wade, aged 17 years, a mill-girl, came to the Protestant Episcopal Hospital in March, 1874, having had her right wrist injured by her hand being caught between the spokes of the fly-wheel of a spooling-machine, which made a complete revolution before she could stop it. On examination, I found the hand bent back, pronated, and directed towards the radial side, the fingers semi-flexed, and the styloid process of the ulna projecting at the front of the wrist. After etherization, I readily reduced the luxation by seizing the fore-arm with one hand, while with the other I made extension, at the same time pressing the carpal bones downwards. There was no tendency to displacement. All the carpal bones seemed loosened, as it were, and the cartilage must have been torn off at the inferior radio-ulnar articulation, as there was crepitus there. Nothing, however, like a fracture in the sense of an appreciable fragment of bone could be detected. This was readily determined, as I examined the case within half an hour after it occurred, and before swelling had supervened.

Malgaigne has collected nine cases of this luxa-

* Holmes, St. George's Hospital Reports, vol. i. pp. 321–322.
†Chelm's System of Surgery, vol. i. p. 543.

‡ Malgaigne's Treatise on Fractures, p. 348.

tion, and Hamilton one, reported by Parker, of Liverpool. These, so far as I am aware, are all that have been put on record up to the present time.

In most cases the reduction is readily effected "by pushing the ulna towards its socket, while an attempt is made to flex the hand, or by extension, supination, etc.," according to Hamilton; but Parker could only effect this while the hand was pronated. I give his own words: "Several ineffectual and very painful attempts were made to accomplish the reduction, by pushing the head of the ulna into its natural position. This was at last effected by seizing the hand to make extension (counter-extension being made at the elbow), then forcibly pronating the hand, at the same time pressing backwards the dislocated head of the bone with the fingers of the left hand. After persisting for a short time, the bone was felt to assume its natural position."* My case was also reduced while the hand was pronated.

NOTES OF HOSPITAL PRACTICE.

JEFFERSON MEDICAL COLLEGE.

SURGICAL CLINIC OF PROF. S. D. GROSS, M.D.

Reported by T. H. FENTON.

PROTRUSION OF SCAPULA.

IDA D., aged 13 years. You notice in this case, gentlemen, two distinct prominences on the back in the region of the scapula. The affection is nothing very remarkable, being simply a projection of the inferior angle of the scapula farther backwards than is customary. The difficulty is owing simply to a relaxed condition of the parts, especially the latissimus dorsi and great serrated muscles. The latissimus dorsi, as you all well know, arises from the spinous processes of the sacrum, the lumbar vertebræ, and the seven lower dorsal vertebræ, and also from a portion of the spine of the ilium. The fibres of the muscle pass upwards and outwards, over the inferior angle of the scapula, to the axilla, where they become twisted, and are finally inserted into the inner edge of the bicipital grove. The deformity is very unseemly. It happens mostly in girls, especially factory-hands who are the day long working in rooms filled with confined and vitiated air; it is also seen in children of a strumous disposition, and in school-girls. The accident is very rare in boys. Sometimes, owing to great violence, the scapula may be detached from its muscular connections, but this is very rare indeed. A remarkable case came under my notice, happening to a boy who was detected kindling a fire in the cellar of a stable. The owner of the property in his anger took the boy and threw him up on the sidewalk. A consultation was called, and the physicians, both of whom were young, stated that a dislocation of the scapulæ from their muscular attachments had taken place as a result of the violence. Suit for damages was brought against the man. I was called in as an expert, and, after examining the child, I testified that the difficulty was not owing to the violence, but due to the relaxation of the parts. Notwithstanding all my experience and years, a verdict of eight hundred dollars was rendered against the defendant, which was unjust in every sense. In the case of the child before us, I shall order a brace to be worn with the pressure applied directly over the inferior angle of each scapula. She will be put upon the use of iron and quinine, and have the cold shower-bath applied daily. We will also slap the parts twice in the twenty-four hours with the ends of a fringed towel dipped in cold water; this promotes the nervous action. You may, if you please, also use the veratria ointment; the patient must always sit on a chair or bench with a back, and not be allowed to bend forwards.

* London and Edinburgh Monthly Journal of Medical Science, December, 1842.

TRANSLATIONS.

CÆSARIAN SECTION.—Dr. Fritz Schurig gives an account of this operation, as performed by him on a patient 37 years of age, in whose case safe delivery was impossible by reason of a condition of osteomalacia. The procedure was as follows. An incision, six inches in length, was made in the line of the linea alba, when the uterus presented itself in a condition of complete anteversion, with the ovarian ligament and the broad ligament protruding through the wound. Afterwards the uterus was turned, and, being pressed against the abdominal walls by an assistant, was also opened by an incision. The placenta proved to be attached anteriorly, and after its removal the living child was seen lying with its buttocks forward, and with the head somewhat turned to the left, owing to its unfavorable position for several days previously. The uterine wound bled freely. The abdominal wound was closed by ten sutures, aided by strips of adhesive plaster. Shortly after the operation the patient succumbed, owing to loss of blood.

The post-mortem examination showed the bones highly hyperæmic, the form of the pelvis indicative of osteomalacia, and the last lumbar vertebra strongly pressed downwards, as after spondylitis. The various bones of the pelvis were movable at their junctures. Four months previous to delivery, the patient experienced a sensation as if something in the pelvis had become *sprung*, or as if the pubic bones had become partly separated. This latter fact is of interest in connection with the proposal to divide the symphysis pubis in narrow pelves.—*Jahrsb. d. Gesells. f. Nat. u. Heilkunde.* A. V. H.

TRANSFUSION IN THE TREATMENT OF CHOLERA (*Inaug. Dissert.*, Berlin, 1873).—G. Kalisher reports two cases of cholera, treated by transfusion of blood, in Berlin, during the last epidemic of this disease. In both cases the blood was injected into the basilic vein; the operation in one case being followed by recovery, and in the other by death. He reports also another case, treated in the same manner, in which the operation was followed by recovery. Among fourteen cases which he found reported in the journals, there was but one recovery. After the operation, however, there was usually noticed some amelioration of the condition of the patient, the pulse became stronger, and the occurrence of death seemed to have been retarded. A. Netter (*Gazette des Hôpitaux*) states that Lorain, after injections of water into the veins, always noticed an improvement in the general condition of the patients, and in one case in which life had been despaired of, recovery took place. The amount of water injected in this case was but 400 grammes, but the patient drank large quantities of the same fluid while under treatment. Netter agrees with Goltz in thinking that the injection of water into the veins is as satisfactory as that of blood or saline solutions, and concludes that the only use of transfusion is the introduction of fluid, by which the circulation is again rendered possible. W. A.

PHILADELPHIA
MEDICAL TIMES.
A WEEKLY JOURNAL OF
MEDICAL AND SURGICAL SCIENCE.

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EDITORIAL.

INCREMENT OF POPULATION.

ACCORDING to a recent English journal, the following table represents accurately the increase in the commerce and population of the Christian world during the last seventeen years. It is of great interest on account of its bearing upon the questions whether the population multiplies too fast for the good of the race, and whether the general comfort of the individual is being increased or decreased:

	FOREIGN COMMERCE.		POPULATION.	
	1855.	1872.	1855.	1872.
Great Britain	£268,400,000	£609,600,000	27,620,000	32,000,000
France	150,300,000	285,800,000	35,750,000	36,100,000
United States	107,340,000	232,800,000	27,000,000	41,000,000
Belgium	69,000,000	199,800,000	4,530,000	5,100,000
Germany, imp'ts only	53,200,000	100,000,000	33,500,000	39,400,000
Austria	26,000,000	89,400,000	36,500,000	35,900,000
Russia in Europe	45,400,000	103,000,000	65,000,000	71,000,000
Italy	32,200,000	103,600,000	18,850,000	27,000,000
Spain	32,500,000	27,800,000	15,600,000	16,370,000
Netherlands	54,000,000	88,000,000	3,433,000	3,650,000
Sweden	9,000,000	14,600,000	3,660,000	4,100,000
Total	£848,340,000	£1,855,200,000	271,443,000	311,620,000

Increase in 17 years (commerce)	118.5 per cent.
Increase in 17 years (population)	14.8 per cent.
Foreign commerce in 1855 per head of population	£3.13
Foreign commerce in 1872 per head of population	£5.95
Increase per cent	90

The most striking deduction to be made from this table is not the great increase of commerce, but the fact that in seventeen years the amount for each individual has nearly doubled. There has been a slow growth in the number of the people, but a very rapid growth in the commerce. Commerce is an index of wealth, and increase of wealth means, in the highest degree, augmentation of physical comforts and well-being. Evidently there is no present danger of the race becoming extinct by an increase of the population beyond the power of production, but there is a steady augmentation of the material things of life, so that every man has more to offer to his neighbor in exchange,—the surplus of the necessities of life in the one clime being the luxuries of another.

PROCEEDINGS OF SOCIETIES.

PENNSYLVANIA STATE MEDICAL SOCIETY.

THE Medical Society of the State of Pennsylvania met at Easton, Wednesday, May 13, at 3 P.M., to hold its twenty-fifth annual session, in the chapel of the Reformed Church.

The meeting was called to order by the President, Dr. S. B. Kieffer, of Carlisle, when the Society was led in prayer by Rev. W. C. Cattell, D.D., President of Lafayette College.

The Chairman of the Committee of Arrangements, Dr. Traill Green, welcomed the delegates to Easton, in a very appropriate speech.

Dr. Green then reported the programme for the meeting, which was adopted, after which the roll was called by the Secretary, the members present numbering in all 129.

Dr. Stetler, of Philadelphia, then made a motion that the regular order of business be suspended to enable the President to deliver his Annual Address at Pardee Hall that evening. He also moved that the regular order be suspended to consider the following amendment to the Constitution, proposed during the session last year by Dr. Atlee of Lancaster; which was adopted.

The section reads thus:

"Any member of a County Society who is censured, suspended, or expelled shall have a right to appeal to the censors of the district, provided the said appeal shall be filed within three months after the date of said act of censure, suspension, or expulsion. The decision of the censors shall be final. Three censors shall constitute a quorum."

The amendment is to strike out the word "final" in the above section, inserting "reported to the State Medical Society at its next meeting for final action."

The matter was discussed by Drs. J. L. Atlee, H. Corson, and others, and adopted by a vote of two-thirds.

On motion of Dr. Green, Dr. P. D. Keyser, of Philadelphia, then read an abstract from his paper on Operation for Cataract, as follows:

Report on One Hundred and Thirty-two Cataract Extractions.

During the past six years, 1868 to 1873 inclusive, I have made 132 extractions of cataract, of which number 60 were made in the Philadelphia Eye and Ear Infirmary, 23 in the Wills Ophthalmic Hospital, and 49 in private practice.

Of the operations performed, 120 were made according to Von Graefe's modified linear method, 3 were made according to Daniel's corneal flap method, 3 were made according to Pagenstecher's method, 3 were made according to Liebreich's method, and 3 were made according to Bowman's suction method.

The ages of the patients ranged from 17 to 82 years.

The acuity of the vision obtained was, in 1 case, $\frac{15}{XX} = \frac{3}{4}$; in 9 cases, $\frac{20}{XXX} = \frac{2}{3}$; in 11 cases, $\frac{20}{XL} = \frac{1}{2}$; in 18 cases, $\frac{20}{L} = \frac{2}{5}$; in 15 cases, $\frac{20}{LXX} = \frac{2}{7}$; in 41 cases, $\frac{20}{C} = \frac{1}{5}$; in 1 case, $\frac{15}{C} = \frac{3}{20}$; in 1 case, $\frac{10}{LXX} = \frac{1}{7}$; in 17 cases,

$\frac{20}{CC} = \frac{1}{10}$; in 3 cases, $\frac{15}{CC} = \frac{3}{40}$; in 1 case, $\frac{5}{LXX} = \frac{1}{14}$; in 5 cases, $\frac{10}{CC} = \frac{1}{20}$, and in 5 cases, closure of the pupil, which can be operated on, and 4 cases total loss.

Classified according to success of operation with vision, we have—Vision to $\frac{1}{10}$ as perfect, 114 cases, $= 86\frac{4}{11}$ per cent.; $\frac{1}{10}$ to $\frac{1}{20}$ as moderate, 9 cases, $= 6\frac{9}{11}$ per cent.

Good success, total $93\frac{2}{11}$ per cent.

Imperfect, some of which may be improved by operation, 5, $= 3\frac{2}{33}$ per cent.

Complete loss, 4, $= 3\frac{1}{33}$ per cent.

In four of the cases iridectomy was made 6 to 12 weeks previous to the extraction of the lens.

Hemorrhage into the anterior chamber occurred in 25 cases. In 19 cases the lens was removed by a traction instrument. Escape of vitreous occurred 9 times.

Iritis, with closure of the pupil, took place in 9 cases; in two of which iridectomy was made afterwards with perfect success, and iridotomy also twice, with good results.

The instrument used for the iridotomy operation was a modification of De Necker's scissors, made by Messrs. Gemrig & Son, of Philadelphia. In both cases a large triangular piece of the iris was easily and readily removed, by which means a good-sized pupil was obtained.

Secondary cataract formed in four cases, which were afterwards operated on with good success.

Severe intraocular hemorrhage took place in one case after the extraction of the lens.

Sloughing of the cornea occurred once only.

Irido-choroiditis, with phthisis bulbi, one case.

In one case death took place from acute abscess in the brain forty-eight hours after a secondary operation for the removal of a band of lymph across the pupil.

Astigmatism was found in fifty-eight cases after the operation, necessitating the use of cylindrical glasses. The great majority of these came, no doubt, from the operation causing a change in the curvature of the cornea.

In the operations by Von Graefe's method the incisions were made in the sclerotic, beginning at the sclero-corneal junction, and the most of them brought out in the same with a large conjunctival flap, while in others the incision was brought out in the cornea close to its edge. Those brought out in the cornea did not heal so quickly, although quite as well, when there was a conjunctival flap.

In many of the cases, the upper part of the anterior capsule was removed after its rupture, as recommended by Knapp.

In a few cases, where secondary cataract was feared, the posterior capsule was ruptured and torn aside, very little, if any, vitreous was lost, and all healed well with perfect to $\frac{1}{10}$ vision.

Care was taken before closing the eye to remove the edges of the incised iris from the corners of the sclerotic wound into the anterior chamber. In some cases, where the pupil was drawn too much upward by the edges of the iris having healed in the sclero-corneal wound, it was relieved by simply cutting the iris loose from its attachments in the cicatrix, by making an incision in the cornea on the line of the former wound with a lance-shaped iridectomy knife, and introducing the small iridectomy scissors, allowing one branch to pass under and the other over the iris, and snipping it through as close to the cornea as possible.

Atropia being put in the eye before and after the operation, caused the iris to dilate, and, being free, resumed its normal position. This was found a more satisfactory operation than iridectomy; there is less hemorrhage into the anterior chamber, and it gives a better-shaped pupil.

NOTE.—After the report was written and laid before the Philadelphia County Medical Society for the State Medical Association, case No. 119 was on May 6 re-examined, and it was found that her vision had improved from $\frac{5}{LXX}$ to $\frac{12}{C} = \frac{15}{8}$, and with $+1\frac{1}{8}$ could read Jäg. 5 readily.

By this the percentage of perfect success is increased to $87\frac{4}{33}$, instead of, as above, $86\frac{4}{11}$.

The paper was referred to the Committee on Publication.

Dr. S. Caro, a representative from the New York State Medical Society, being formally received, then addressed the Society.

After due motion, the order of business for Thursday was arranged, the first addresses being those on Surgery, Obstetrics, and Medicine.

A Committee on Unfinished Business, composed of Drs. Stetler, of Philadelphia, H. Corson, of Conshohocken, and E. A. Wood, of Pittsburgh, was appointed by the President.

On motion, the report of the Committee from last year on the Revision of the Censorial Districts was taken up and read, and adopted after due discussion.

According to this action, the State is divided into thirteen Districts, each of which has a Censorial Board of three members, to which one member from each County Medical Society is eligible.

Other less important amendments, offered at the last meeting of the Society, were read, and adopted without opposition.

On motion of Dr. Green, the Society adjourned to give the County Societies opportunity to select their representatives for the Committee on Nominations.

Wednesday Evening.—The Society assembled in the auditorium of Pardee Hall at 8 o'clock. The Hall was filled with ladies and gentlemen from the College and town. Some of the members of the Society have their wives with them, and they were present also. On the stage sat the former Presidents of the Society, the Vice-Presidents, and Dr. Traill Green, who introduced Dr. S. B. Kieffer, of Carlisle, the President of the Society, who delivered the annual address, which was received with much applause and by motion was referred to the Committee on Publication.

Before adjournment the Committee on Nominations was announced by the Secretary, viz.: Beaver, Dr. Jackson; Berks, Dr. Weidman; Allegheny, Dr. Wood; Blair, Dr. Clark; Bradford, Dr. Conklin; Columbia and Montour, Dr. Pursell; Cumberland, Dr. Mosser; Dauphin, Dr. Orth; Delaware, Dr. Roland; Franklin, Dr. Snively; Huntingdon, Dr. Shade; Indiana, Dr. Rutledge; Lancaster, Dr. Davis; Luzerne, Dr. Murphy; Lycoming, Dr. Crawford; Mercer, Dr. Fulton; Mifflin, Dr. Hersberger; Montgomery, Dr. Corson; Northampton, Dr. Bachman; Perry, Dr. Swartz; Venango, Dr. Richey; Clearfield, Dr. Burchfield; Philadelphia, Dr. Eshelman; Schuylkill, Dr. Halberstadt; Susquehanna, Dr. Ainey; Tioga, Dr. Maine; York, Dr. Bailey.

SECOND DAY.

Thursday Morning.—The early part of the morning was occupied by the members of the Society in inspecting the College buildings, museums, laboratories, and halls, and in the preliminary meetings of committees.

The Society was called to order at half-past nine o'clock, in Pardee Hall, the minutes of the previous meeting being read and approved.

An address, prepared by Dr. Thomas M. Drysdale, of Philadelphia, now travelling in Europe, was first read,—subject, "Surgery,"—Dr. Washington L. Atlee, of Philadelphia, reading the report by request.

Dr. Drysdale chose Tracheotomy, regarding it as equally important to the surgeon and the practitioner, "since it brings back to life one who is suffocating and

is at the point of death." Every practitioner should be ready to perform it. It is required for inflammation of the larynx and trachea, and its results; spasm of the larynx; abnormal growths in the larynx; paralysis of the larynx; pressure from tumors, aneurisms, or abscesses; foreign bodies in the windpipe. He then mentioned, under each head, the diseases or accidents likely to require this operation. He then detailed, somewhat minutely, the anatomy of the parts involved in the operation. The instruments required were a sharp scalpel with a good point, a blunt-pointed bistoury, a director, a tenaculum, a pair of sharp-pointed straight scissors, dissecting-, torsion-, and dressing-forceps, two blunt hooks or curved spatula, a dilator, a canula adapted to the age of the patient, with tape to secure it, a small sponge probang, a gum-elastic bougie of a size which will pass through the canula, a syringe and tube to pass into the trachea to use if the operator fears to apply his mouth to the wound to suck out the blood from this organ; plasters, sponges, water, and towels also at hand.

The dilator should be curved at a right angle: it has three branches of equal length, which are grooved on the inside; and it opens by pressure.

The canula should be the ordinary double canula, with the improved neck-plate of Mr. Rogers, made so that while the neck-plate is fixed the tube is allowed to follow partially the motions of the trachea. An important point is that the canula should be double, that the inner tube may be withdrawn and cleansed without disturbing the outer. The surgeon should have canulæ of various sizes, and use the largest.

Anæsthetics should be employed except where the patient is asphyxiated and nearly or quite insensible, or in cases of sudden suffocation.

This operation includes laryngotomy, laryngo-tracheotomy, and tracheotomy. He then described in detail each of these operations. He next considered the difficulties attending the operation. *Hemorrhage*: Use the knife as little as possible after the first incision, substituting the handle, the director, and the fingers.

Ligate, if practicable; but if time will not suffice, open the trachea at once, introduce the tube, and if any blood has entered apply the mouth and suck it out. Of course this cannot be done where there is contagious disease: here the syringe should be employed; but if it becomes imperative, the operator should not neglect the precaution of Dr. Gross, of "washing out the mouth and throat well, immediately after, with a strong solution of chlorinated soda or some other disinfecting fluid, for the purpose of promptly neutralizing the poison contained in the secretions of the parts."

Hemorrhage is rarely fatal if the surgeon does not lose his presence of mind. Always complete the operation, however forbidding the aspect of the case. The surgeon may lose the opening, owing to the fact of making it too small, or a convulsive effort may ensue; do not spend much time, but make another. The after-treatment requires care.

The air should be kept moist. Keep lime constantly slaking near the patient, both for its steam and its dissolvent effect. Attend to the tube: withdraw and cleanse it every two hours at first, or oftener if necessary. Pass a bougie, to cleanse if necessary, down into the trachea. This causes cough, and matters are thus expelled. A skilful attendant should be the one to look to these matters.

In croup and diphtheria, chlorate of potassium should be freely exhibited. Dr. D. uses a saturated solution, thirty grains to the ounce, a teaspoonful to a tablespoonful, according to age, every half-hour to every three hours. If the bowels are irritated, add a small quantity of opium, and, as the patient progresses, add tincture of iron.

Relief having been secured, the canula may be removed as soon as it can be done without risk. To determine this, stop the end of the tube with the finger, and see if the patient can breathe through the larynx. If so, cork the tube for twenty-four hours. If all goes well, remove the canula and let the wound heal, keeping it clean and covered with a light dressing. It may, in chronic disease, be necessary to wear the tube for life.

Referred to the Committee on Publication.

The next thing in order was the reading of the Address on Obstetrics, prepared by Dr. William B. Atkinson, of Philadelphia, given in abstract, which gave in detail an accurate account of the progress in Gynæcology and Obstetrics during the past year. The doctor said that post-partum hemorrhage, its treatment and prevention by anticipation, had occupied the attention of the profession both at home and abroad. Many and learned discussions on this subject had occupied the time of the Societies and the pages of the medical journals. The general conclusion seemed to be that it was surely controlled by the injection of perchloride or persulphate of iron, which might be used even without dilution, and, in the vast majority of cases, without injury. A few observers, among them Dr. Snow Beck, insisted that these injections were highly prejudicial. The other subjects reported upon by Dr. Atkinson comprised almost everything connected with gynæcology and obstetric medicine.

Dr. Atkinson reporting in favor of the use of chloral in puerperal eclampsia, the subject created much discussion. Prof. Gross, of Philadelphia, favored chloral, but insisted that the dose must be at least thirty grains, frequently repeated.

Dr. Atkinson also administered it by the rectum when it could not be employed by the mouth.

Dr. Goodell, of Philadelphia, agreed with both gentlemen.

Dr. Hiram Corson, of Montgomery County, took the floor in favor of what is now the unpopular practice of bleeding in cases of puerperal convulsions, pneumonia, pleurisy, and acute hepatitis.

Dr. Atlee, of Lancaster, said he was an "old fogy" in this respect, and related cases where death would have been the result if the use of the lancet had not been resorted to. He had more faith in bleeding, however unpopular it might be, than in bromide of potassium, opium, or the new compound, chloral.

Prof. Gross, of Philadelphia, took the floor again, and said that he wished it distinctly understood that there is at least one teacher in Philadelphia who recommends and insists on the judicious use of the lancet, and he was glad that Mr. Corson had the courage to get up in this enlightened age to advocate the unpopular method of bleeding. He said that fashion rules us too much, and, instead of exercising our own good, strong, common sense, we put too much confidence in men of reputation, especially across in Europe. The day is coming, and now is, that our own authorities in this country should be consulted, and when good sense and sound experience should be followed, rather than fashion.

Dr. G. D. Bruce, of Pittsburgh, referred to the causes of these attacks, necessarily requiring different remedies.

Dr. W. L. Atlee, of Philadelphia, cited an instance in which the subject was bled nearly to death, and until he feared to pursue further bleeding; yet still the convulsions continued. He then gave an emetic, when up came huge chunks of meat, and the patient was instantly relieved. He favored the use of large doses, three to four drops, of croton oil, repeated to hypercatharsis. The irritation of the alimentary canal was, he believed, a great cause of this affection. Similar

remarks were made by Dr. Stites, of Perry County, Dr. Leasure, of Pittsburgh, and others.

Dr. Kieffer, the President, concluded the discussion by a summing up as to the importance of fine discrimination in diagnosis, after which the Society adjourned.

AFTERNOON SESSION.

The afternoon session was held in the chapel of the Reformed Church, being called to order by the President at 2 P.M.

The Permanent Secretary opened the meeting by reading the report of the Committee on additional accommodations for deaf-mutes in the western portion of the State. They had been successful in obtaining an appropriation from the Legislature, had land donated them, and, altogether, very encouraging prospects. The report was signed by Dr. L. Turnbull, of Philadelphia, Chairman. It was received, and ordered to be entered on the minutes, and the Committee was continued.

A paper was also read by the Secretary, from Dr. L. Turnbull, on the Education of Deaf-Mutes.

The writer took the ground that not enough attention was given in our State to teaching the deaf-mute articulation, there being no special institution for the instructing of private pupils, so that we were necessarily obliged to send such applicants to other cities, in New York, Connecticut, and Massachusetts, to receive the advantages of such instruction. But an important change has taken place, not alone in the United States, but also in Europe, in the education of this most interesting class.

Up to a very few years back, the system of teaching the deaf and dumb was exclusively by signs, also a great improvement on their former sad state. In a letter addressed (1873) to his colleagues by M. Léon Vaïsse, late director (principal) of the National Institution for the Deaf and Dumb at Paris, upon the occasion of his exchanging the laborious duties of that position for the well-earned repose and dignity he now enjoys under the title of Honorary Director of the institution,* he observes, "In communicating with the deaf, the manual alphabet has the advantage over writing of a greater degree of convenience, inasmuch as it dispenses with all material aid. The manual alphabet, however, may be advantageously replaced in its turn by the labial alphabet, which is far more useful in the ordinary conditions of life.

"It is these exercises in speech that more than anything else can succeed in familiarizing the born deaf-mute with ordinary language, and it is the insufficient practice in them, in the case of too many pupils, that constitutes the weak point of the French system.

"On the special point of the prominence due to articulation in our instruction, I have not succeeded in making you share my convictions. These convictions, however, are of long standing, and are based upon the experience of my personal practice, and upon observation of the movement which of late years has prevailed in so many French and foreign institutions. It is not a question of reviving the old controversy which divided the founders of the French and German schools.

"The teachers beyond the Rhine have ceased to reject pantomime as the first method of intellectual development of their scholars; while, on the other hand, the Swiss and German institutions are not the only ones in which the practice of speech is made an essential element in the education of the child whom we style deaf-mute.

"Among our Northern and Southern neighbors in Belgium, Holland, Spain, and Italy, as well as in England and the United States, considerable prominence is now given to this teaching,—in old institutions which have modified their method by the introduction of this new element, and in more recent establishments which have sprung up, besides certain old ones not disposed to modify the principle of their previous method. In France, thanks to the impulse given by M. Fourcade, of Toulouse, as good results in teaching articulation have been and are now obtained in several of the institutions of the departments as have been reached anywhere.

"But now lip-reading or visible speech is becoming the popular mode, and is another advance in the right direction, so as to fit the deaf-mute, no longer dumb, to communicate with society in general."

Dr. Turnbull's paper was referred to the Committee on Publication.

Reports on Meteorology and Epidemics were presented from the counties of Philadelphia, Fayette, Lancaster, Tioga, Adams, Mercer, Schuylkill, Chester, Bradford, Berks, Lehigh, Luzerne, Lycoming, and others. These were referred, without reading, to the Committee on Publication, who will use their discretion as to what and how much shall be published in the Transactions.

A motion was then made, and agreed upon, that all other County Societies be permitted to send their reports to the Permanent Secretary in two weeks.

Dr. Benjamin Lee, of Philadelphia, in presenting the report from Philadelphia County, offered the following:

"*Whereas*, The interest which at present exists in the scientific world in the question of the comparative merits of cremation and sepulture is, in the opinion of this Society, based upon a well-founded conviction that the latter mode of disposing of the bodies of the dead has in various ways exercised an injurious effect upon the health of the living, and especially by contaminating the sources of their supply of drinking-water: Therefore,

"*Resolved*, That the several County Societies be, and are hereby, instructed to embody in their next annual reports to this Society a detailed account of the location of the burying-grounds and cemeteries within their respective limits, as related to the springs, reservoirs, or streams on which the neighboring populations depend for their water-supply; including the direction of the water-shed and pitch of the geological strata, an estimate of the purity of the water usually employed for drinking-purposes, and a statement of the more frequent zymotic diseases, and the extent to which they have prevailed during the present conditions as compared with previous periods."

The following test for the purity of the water is suggested as both delicate and reliable: it is that commonly known as *Nessler's test* for the detection of ammonia.

Dissolve 35 grains of iodide of potassium in ℥iij ℥vj of distilled water; to this add a cold concentrated solution of mercuric chloride, until the mercuric iodide, at first formed and then dissolved by agitation in the solution, at length produces a very small permanent precipitate; 100 grains of caustic potassa are next dissolved in ℥vi ℥ij of distilled water. Mix the solutions, and add distilled water to make ℥xv ℥v. This added to water containing .03 grain of ammonia to a gallon will give a yellow color; a larger amount of ammonia, a brownish-yellow color.

Dr. McIntire, Adjunct Professor of Chemistry in Lafayette College, made some remarks upon this test, and upon the difficulty of testing water under various circumstances. Dr. McIntire said that while Nessler's reaction is a most delicate and accurate test for ammonium salts, still much of the animal nitrogen may combine as nitrites, or be oxidized still more into nitrates, which will not be detected by the reagent.

* American Annals of the Deaf and Dumb, January, 1874, 12, 19, 20.

The permanganate of potassium test will show the presence of organic matter, but does not show whether vegetable or animal. While, therefore, if ammonia is shown the water is not good, we may have water showing no reaction with the Nessler solution and yet not proper for use.

The resolution was adopted, and the test referred to the Committee on Publication.

Dr. Allis, of Philadelphia, read a paper upon the *Diagnosis of Obscure Injuries of the Hip.*

He stated that in the March number of the *Philadelphia Medical Times* he called the attention of the profession to the relation the great sacro-sciatic notch bore to the acetabular cavity. That if a pelvis were placed in the position of one lying on his back, the "notch" in the majority of cases will lie *directly below* the acetabular cavity, and from the conformation of the pelvis it would appear possible, and, indeed, very probable, that a dislocation in its direction might not be followed with any shortening of the limb when it is compared with its fellow, on a line with the axis of the trunk. Now, if the limbs are compared at right angles to the trunk, a discrepancy will at once be produced, for the very reason that the head of the bone lies in a new position, an inch or more directly below its normal bed.

(Drawing of a pelvis exhibited.)

The importance of this anatomical feature would appear—

1. In enabling one to determine positively that his efforts at restoration had been successful.

2. In determining complete intracapsular fractures.

3. In determining severe contusions, or incomplete and impacted fractures.

(1) The limb cannot be regarded as restored until its measurements *in the axis* of the trunk, and at right angles to it, correspond.

(2) In complete fractures the usual signs are eversion, shortening, and a doubtful crepitus. If in such a case we compare the limbs at right angles to the trunk, while the weight of the sound limb will be sustained by the neck of the femur, the neck of the other being broken, the limb will sink until the trochanteric end shall become arrested by its ligamentous surroundings and thus produce a shortening similar in many respects to the preceding case. Now, to determine that this is fracture and not dislocation, lift the limb to a level with its fellow, and if a force sufficient to overcome its weight will effect this and if on letting go again it sinks an inch or more, it may be confidently asserted that it is fracture of the neck, for if it were a dislocation it would require the strength of one or more strong men to bring the limbs to the same altitude.

(3) Incomplete impacted fractures. This, Dr. A. said, was a feature of the utmost importance, as this variety of fracture was the only one implicating the joint that was likely to result in bony repair.

Rude manipulation in such cases would endanger the impaction and hazard the chances of recovery; hence he enjoined gentleness, warning against an attempt to obtain crepitus. In such a case, place the patient on a level surface, and with no obliquity of the pelvis; notice the relation the limbs bear to each other; then compare them at right angles, and if they still sustain the same relation it may be confidently assumed—

(*a*) That the head of the bone is in the acetabular cavity.

(*b*) That no complete fracture is present.

(*c*) That the injury is a severe contusion or an impacted incomplete fracture, and the nature of the injury, sex, age, persistence of pain, and degree of helplessness, will point out an intelligent and rational course of treatment.

The paper was referred to the Committee on Publication.

On motion of Dr. Murphy, of Luzerne County, Dr. Davis, of Wilkesbarre, was permitted to read his account of a case of vaginal ovariotomy.

Dr. W. L. Atlee evinced much interest in this case, and congratulated Dr. Davis on his success.

Paper referred to Committee on Publication.

The report of Committee on Nominations was then presented by Dr. W. M. Weidman:

OFFICERS FOR 1874.

President, Dr. Washington L. Atlee, of Philadelphia.

Vice-Presidents, Drs. George D. Bruce, Pittsburgh; Rowan Clarke, Antistown; P. B. Breinig, Bethlehem; Alexander Craig, Lancaster.

Corresponding Secretary, Dr. R. J. Dunglison, Philadelphia.

Permanent Secretary, Dr. W. B. Atkinson, Philadelphia.

Recording Secretary, Dr. R. S. Chrisman, Pottsville.

Treasurer, Dr. Benjamin Lee, Philadelphia.

Place of meeting, Pottsville.

Committee of Arrangements, Drs. A. H. Halberstadt, G. W. Brown, J. T. Carpenter, D. W. Bland, L. M. Thompson, O. M. Robbins.

Time of meeting, second Wednesday of June, 1875, at 3 P.M.

Committee of Publication, Drs. W. B. Atkinson, R. J. Dunglison, B. Lee, T. M. Drysdale, L. J. Deal, A. Fricke, Charles McIntire.

Also Censors and Delegates to American Medical Association, and to neighboring State Medical Societies.

Report adopted unanimously.

Dr. J. L. Atlee, of Lancaster, then stated that his brother, Dr. Atlee, President elect, being compelled to absent himself by next train to Philadelphia, desired to return his thanks for the honor conferred on him.

Dr. Washington L. Atlee then briefly addressed the Society as follows:

He thanked the members for this honor, quite unsolicited by him. Office should seek the man. He accepted, knowing his want of familiarity with parliamentary usages. To preside over an assembly of professional men whose sole aim is the progress of science, the amelioration of human suffering, the promotion of public health, and the cultivation of social intercourse, must be inspiring.

Medical art and science, as applicable to man, have originated out of the necessities of the race, and belong to all classes. The cultivation of medicine is a common duty, as it partakes of a common interest.

The temple of science is built by all.

He would impress upon all committees the necessity of faithful attention to their duties. It is hoped that none will accept a position without they intend to fully perform their duties. We should have no sinecures. Let us all work. Then our Society will assume a proud position among her sisters of other States, and our annual Transactions will be a monument to our industry and worth.

By these reunions, while we cultivate the best feelings of the heart, we at the same time, by honest brain-work, will add to mental culture, and contribute largely to the stores of medical knowledge.

In conclusion, he expressed the sentiments of every member in acknowledging the courtesies and attention received from the citizens and the profession of this town, nestled as it is in the bosom and embrace of the most romantic and picturesque valleys of the State. Easton, its people, its schools of learning and science, its manufactories, has left an impression upon each of us as durable as the everlasting hills which surround it. Like the waters of the Lehigh and the Delaware, whose trail (Traill) enriches distant parts of the State, our memories will converge from the re-

motest regions to this ever-green (Green) spot in the history of our Society.

Dr. Gross, of Philadelphia, then moved to meet every alternate year at Harrisburg. Decided out of order by the chair.

Dr. Gross then offered it as an amendment to the Constitution. Also objected to. Laid over till next year.

Dr. W. H. Pancoast then followed with the reading of a paper relative to a new operation for ununited fracture of the tibia. Having a case of ununited fracture of the tibia, where, in spite of every method heretofore employed, firm union could not be obtained, he finally, in preference to amputation, as desired by the patient, broke the fibula, having previously weakened it by holes bored with a gimlet, and forced the ends to override, so as to enable the widely-separated ends of the tibia to come in contact. This resulted in a firm bony union, and gave a limb capable of being walked upon.

He also detailed a new method for the treatment of fractures of the femur by means of a chair,—the patient being in a sitting position. When lying upon the back, involuntarily the muscles evert the toes and limb, and thus prevent the broken ends of the bone from coming in contact. But by drawing the patient up so as to rest upon the ischial protuberances, the action of the muscles is to invert the toes, and this brings the ends into apposition.

Both papers were referred to Committee on Publication.

A report from the Treasurer, Dr. B. Lee, was presented, showing a favorable balance in the treasury. Referred to Auditing Committee of Drs. Pollock, Weidman, and Bruce.

Dr. Atkinson, Chairman of Publishing Committee, presented his report, which showed that twelve hundred copies of the last year's Transactions had been printed.

Dr. Sibbet, Chairman of Committee on Medical Legislation, reported progress, and requested that the Committee be continued, with power to fill vacancies, which was granted.

Dr. R. J. Levis, of Philadelphia, was appointed by the chair to deliver the address on Surgery, Dr. Wm. Pepper, of Philadelphia, the address on Medicine, and Dr. Joseph Coblentz, of Reading, the address on Obstetrics, for 1875.

This was followed by the reading of an abstract of a voluminous paper, by Dr. J. Solis Cohen, of Philadelphia, on tracheotomy and its relation to croup, which he had read January 14, 1874, before the Philadelphia County Medical Society. Referred by that body to the Medical Society of the State of Pennsylvania.

The paper in question originates from the published statistics of over five thousand cases of tracheotomy in croup, gathered from sources in both Europe and America, and treats at length on the following points:

1. The indications for the operation.
2. The points of importance connected with the operation itself.
3. The after-treatment of the disease and of the surgical wound; and
4. The casualties which prevent recovery.

Among the statistics given is a very remarkable table of successes at a very early age, all of them in cases under two years of age; one, indeed, at as early a period as six weeks.

Dr. Cohen does not adhere to the idea that croup is identical with diphtheria, though he admits a relation analogous to that which typhoid pneumonia has to pneumonia.

He thinks that there is a peculiar systemic poisoning in diphtheria which is not present in sthenic croup; his paper is based, however, upon both forms of the disease, considering the demands for tracheotomy to be equally imperative at certain stages.

The doctor also states that not a single case is recorded of recovery after tracheotomy for diphtheria in the adult, accounting for this by the supposition that the comparatively large size of the larynx in the adult does not entail the danger from suffocation that is met with at a similar stage of the disease in the infant; therefore the blood-disease progresses to a fatal issue before there is much mechanical interference with respiration.

Time will not permit of further pursuing the doctor's line of argument for and against tracheotomy in croup, but, in conclusion, we give the rules which he deems safe to adopt:

1. That there are no insuperable contra-indications to tracheotomy in croup.
2. That the administration of an anæsthetic is admissible in performing the operation for the purpose of controlling the child's movements, but should be used with great caution.
3. That a careful dissection should be made, and hemorrhage arrested before incising the windpipe, whenever there is at all time to do so.
4. That the incision should be made into the trachea as near the cricoid cartilage as possible, to avoid excessive hemorrhage and subsequent accidents which may occasion emphysema.
5. That a dilator should be used, or a piece of the trachea be incised, if there is any difficulty in introducing the tube.
6. That the tube should be dispensed with as soon as possible, or altogether if the case will admit of it.
7. That assiduous attention should be bestowed upon the after-treatment, especially that of the wound, and that a skilled attendant should be at hand promptly for the first twenty-four or forty-eight hours immediately after the operation.

Entire paper referred to Committee on Publication.

Committee on Unfinished Business, reporting no items, were dismissed.

The next thing in order was a paper offered by Dr. J. M. Junkin, of Easton, which was read by the Permanent Secretary.

Case in which Life was Saved by Transfusion.

Some years ago I saved the life of a patient by transfusion. As no account of the case has been made public, I lay before you the simple means I used, which proved successful, thinking they would be valuable to other physicians under similar cases.

I was called to attend Mrs. F. about 10 P.M.; found the patient flooding fearfully, from abortion at about six weeks; she was much prostrated from the loss of blood; pulse scarcely perceptible at wrist.

I immediately stopped the blood by a tampon of soft rags, removed pillows from beneath the head, gave stimulants, but the patient still continued to sink; then raised the foot of the bed to retain all blood the patient still had in the brain, and continued this elevation of the patient until she had to be held to prevent her head from pressing against the head of the bed; pulse still feeble, not perceptible scarcely, even at carotid artery.

I then said there was no chance of saving her life, except by giving her more blood, and that from another person, upon which her husband immediately offered his arm; but now another difficulty presented itself: how could we transfer this blood? No instruments at hand, and some distance in the country, and every second shortening the patient's life.

Asked for a syringe; was brought one, a glass, female, with a curved neck, and a bulb on the end of it; at first, thought it would not do, but remembering glass would melt, ran to the fire, thrust it in until softened, drew it out into a slender tube, broke off the end to a proper size, then placed it on the fire to smooth the end, then back to my patient; tied up the husband's

arm, drew several ounces of blood; then told him to place his finger on the orifice, filled the syringe, opened a vein in the arm of the patient, and forced as much blood as possible therein. About two ounces passed in. It was not necessary to repeat this operation, the husband's blood being of a very rich quality, and in a few minutes the patient revived, pulse slowly increasing; by daylight was able to lower the bed a little at a time to its level, and in a few hours to place a small pillow under her head.

The recovery was then rapid and complete. A little more than a year after, I delivered the patient of a large healthy child.

Referred to Committee on Publication.

Committee on Memorial for a new Insane Hospital, represented by Dr. John Curwen, of Harrisburg, reported as follows. A memorial had been prepared and extensively circulated, as the Society desired. A bill had passed the Legislature, which would be signed by the Governor. Also another bill had passed this week, but was directly in opposition to the views of the Society.

He requested the entering of these on the minutes, and the continuance of the Committee, which was granted.

After some remarks from Dr. Green on the Almshouse Insane Department of Northampton County, Dr. Wood, of Pittsburgh, moved that said Northampton County Medical Society be requested to furnish copies of the report of the Committee on the Condition of the Insane in the County Almshouse to the different county Medical Societies of the State, which motion was carried.

A resolution of amendments to the Constitution, to make it harmonize in all its parts with amendments adopted to this session, was offered by Dr. Stetler, and carried.

The following was then offered by Dr. Curwen:

Resolved, That the Committee on Publication be requested to examine carefully the Constitution and By-Laws of this Society, in order to arrange the phraseology and make such modifications as may be necessary to place the whole in a connected and harmonious form. Carried.

The Treasurer's accounts were reported correct by the Auditing Committee, who were then discharged.

Mr. Seamen, on motion by Dr. Lee, was then permitted to exhibit and explain a wheeled crutch and some splints.

Mr. Molesunth was also permitted to exhibit his dilators, uterine syringe, etc.

The Corresponding Secretary's report was then read by the Permanent Secretary.

It showed the addition of several new county Medical Societies. Also the report of the majority of Censors in the case of Dr. Findley and the Blair County Medical Society.

A minority report on this subject from one Censor was then read by the Secretary, but negatived by the President, as he decided the majority report final.

Dr. Crawford appealing from the decision of the chair, the question was put, but the majority sustained the President.

Dr. Curwen then moved that one member be appointed to prepare a report on Hygiene, and also one on Mental Disorders, such report to be read each year before the Society.

The following gentlemen were then appointed by the President: Dr. B. Lee, of Philadelphia, on Hygiene; and Dr. John Curwen, of Harrisburg, on Mental Disorders.

The Society then adjourned.

THIRD DAY.

The Society assembled in the Reformed Church, at 9 A.M., the President in the chair. The first thing in order was the reading of the minutes, which were approved.

The following was then offered by Dr. John L. Atlee, of Lancaster:

Whereas, This Society has heard with great regret of the death of our ex-President, Dr. Wilmer Worthington, one of the earlier proposers of the formation and organization of this Society;

Resolved, That in the death of Dr. Worthington the medical profession has lost one of its brightest ornaments, the people of the State one of their most generous and actively humane benefactors, and society the intercourse of a highly cultivated Christian gentleman.

Resolved, That this resolution be communicated, with our sincere condolence, to the family of Dr. Worthington. Unanimously carried.

A resolution to the effect that the thanks of the Society be returned to the Reformed Church for the use of the chapel, to the Trustees of Lafayette College for the use of their beautiful Pardee Hall, and for the courtesies of the President and Faculty during our stay at Easton, was offered by Dr. Jas. King, of Pittsburgh, and unanimously adopted by the Society.

On motion of Dr. Green, the following resolutions were read and adopted;

Resolved, That the thanks of this Society be presented to all its officers for the faithful manner in which they have attended to the duties of their respective offices.

Resolved, That the thanks of this Society be presented to the reporters of the proceedings of our meeting, and the editors of the papers—*The Free Press* and *Evening Express*—for the publication of the same. Adopted.

Dr. Curwen then moved that it be resolved that the Medical Society of Pennsylvania earnestly urge upon Congress the passage of the bill, now before them, to give increased rank to the medical corps of the United States Army, and thus open it to appointment and promotion.

Dr. Crawford moved that the thanks of this Society be tendered to the Northampton County Medical Society, and to the citizens of Easton, for their kindness and courtesy extended to us during our stay with them.

Both motions agreed to unanimously.

Then, with a few well-chosen and pleasing remarks from the President, the Society adjourned, to meet on the second Wednesday in June, 1875, at Pottsville, at 3 P.M.

GLEANINGS FROM OUR EXCHANGES.

HERPES GESTATIONIS.—Dr. L. Duncan Bulkley, in the *American Journal of Obstetrics* for February, 1874, gives an able and interesting paper upon a rare and peculiar affection of the skin, which he describes under the name of herpes gestationis. An accurate report of a case which came under his observation is presented, as well as an analysis of eight other cases which have been noted in literature. The disease consists in the development of erythema, papules, vesicles, and bullæ, attended with intense itching and burning, commonly grouped, but not following any special nerve-tracks, appearing generally on the extremities, and afterwards involving the greater part of the body. It is an affection directly dependent upon the gravid state of the uterus. It may appear at any period of gestation up to the seventh month, and usually continues until after delivery. It does not terminate at once, but slowly retrogrades, by the development of fewer and fewer vesicles, rarely remaining, however, as long as a month after delivery. The disease is non-febrile. The eruption may occur very early in pregnancy, and is apt to

return with succeeding gestations. It is sometimes accompanied and followed by other neurotic troubles, as urticaria, neuralgia, etc. The disease must not be confounded with eczema.

The treatment which Dr. Bulkley employed with success consisted in strong tonics, with antipruritic local applications. Iron, quinine, strychnine, and arsenic were used from time to time, together with a dietary regimen, consisting of a meal of oatmeal or bread and milk just before retiring. The recumbent posture was also insisted upon. Locally, a wash composed of pix liq. ʒii, caustic potassa ʒi, water ʒv, one drachm of which is to be diluted with four ounces of water, was used with benefit in allaying the itching from which the patient suffered.

Dr. Bulkley adopts the term herpes gestationis, proposed, we believe, by Mr. Milton, of London, embodying, as it does, the clinical characters of the eruption, and at the same time denoting the sex and condition of the patient in which it occurs.

DOUBLE ANEURISM OF THE FEMORAL AND POPLITEAL ARTERIES (*The Lancet*, April 11, 1874).—Dr. Thomas Diver reports a case of aneurism in the femoral artery just below Poupart's ligament and in the popliteal. He ligated the external iliac artery. Gangrene of the part followed, and necessitated amputation at the lower third of the thigh. This was followed by entire recovery.

NOTES AND QUERIES.

"No, Betsy, drink fair, wotever you do."—*Sairey Gamp.*

TO THE EDITOR OF THE PHILADELPHIA MEDICAL TIMES:

As a subscriber, I feel the right to scold you roundly for articles in the last two numbers.

Why will you persist in saying that the staff of the Pennsylvania Hospital is responsible for the century-old advertisements which seem to bother you so much? You know as well as anybody that the staff has never had anything whatever to do with them.

So far as inquiry can be made, no member of the staff is able to trace a private patient as coming to him through the advertisements, while on the contrary all classes of persons have been led by them to seek the proper officers and to find the right way to avail themselves of the charity of the hospital.

In the guise of a "Slowtown" letter you admit a mass of common but none the less insufferable cackle about Philadelphia—its trade, its schools, and everything about it going to the devil generally.

Now, if a doctor has any power of observation whatever, who knows better than he that all this is unmitigated nonsense? A closet-man might, by repetition, be made to believe it, but a doctor who drives and walks through every section of the city knows better. Philadelphia has its ups and downs, like every other place, but its general progress in growth, and necessarily in trades and occupations, is truly marvellous. With all its defects, many exceptional things, when contrasted with other cities, can be claimed and proved in its favor. Who better than a physician, for example, can appreciate the way in which its working-people are housed? Could this be so if there was nothing for them to do?

Now, Mr. Editor, don't foul your own nest any more. Write us up instead of down. Protest against the bad, but credit us with the good. Don't growl all the time, but let us understand that when you do growl it means something. Yours truly, ——.

To scold is generally considered the especial prerogative of maidens soured by time and disappointment. In the above letter there is a sort of recklessness as to facts, and especially as to common sense, which would indicate such an origin. We think most of our readers will agree with us, however, that the internal evidence is very strong that it was written by one of the Pennsylvania Hospital staff, for it is doubtful if, outside of the staff, any one could be found to defend the advertisement. At any rate, the letter must have been inspired by members or a member of the body concerned, and we think "our growl must mean something," when the rulers in Israel are brought by it to appear at the bar of public opinion. Our correspondent's defence is so original that he will find it all anticipated, and, as we think, demolished, in one of our earlier editorials, but certainly he must be trading upon the supposed imbecility of his readers when he intimates that a man is not responsible for the *permitted* use of his name. In the orthopædic advertisement recently published in our columns Dr. Sinkler's name is conspicuous by its absence,—an absence due to his having objected to its being there, before, be it said to his credit, the *Times* had published a word upon the subject. Since we have ventilated the matter, Dr. Hunter, one of the out-patients' staff of the Pennsylvania Hospital itself, has requested his name to be withdrawn from the advertisement, and his request has been complied with by the Board of Managers. In the face of these facts it certainly requires a good deal of buccal development to assert soberly that the staff are not responsible.

We never have in any way admitted a "mass of cackle" about Philadelphia generally, unless one sentence makes a mass. We know as well as our correspondent that it is probably the most comfortable city in the world, but we also know as well as he does that the tender-hearted anti-progressionists, of whom he seems to be a type, have been as a nightmare upon us, and have driven very much of the best talent in all businesses out of our city, have destroyed its commerce, and banished its literati. The recent revival in trade and life is due to the discontented—the growlers; and all we hope for is that the strength of our medical schools is not so sapped by contented glorying in the past that the growing element of discontent cannot restore their former prestige.

No doubt the oxen of the Augean stables upbraided Hercules with fouling their nest, when he stirred up the mighty mass of filth and let loose the mephitic odors; but let us say in brief to our correspondent that the nest is fouled not by those who try to cleanse it, but by those whose nostrils by habit have become so used to the odor that they do not perceive it, and who sit quiet in the old places while power and supremacy are slipping away; who morning and evening dote upon their greatness, whilst the world is laughing at them, and who only raise their voices when disturbed in their lethargic slumbers.

We intend, if possible, to write Philadelphia up, but not by singing the old time-worn lullabies of her ancient greatness, her present perfections, and her wonderful homes for working-people. Rather let our note be some battle-cry, which shall awaken the sleeping giant to a sense of the necessity for effort.—ED. *P. M. T.*

OBITUARY.

At a called meeting of the Zanesville Academy of Medicine, held Saturday, May 2, to take action in relation to the death of its late Fellow, Dr. Jno. G. F. Holston, Sr., which took place at Washington, D.C., May 1, 1874, the following resolutions were adopted:

That we, whose occupation has been to relieve human suffering, are reminded that the time must come when our places on earth shall be vacated. Therefore,

Resolved, That in the death of Dr. Holston the Zanesville Academy of Medicine loses one of its prominent members, and the profession at large an eminent physician and surgeon of extensive professional and literary culture, ripe in experience and accurate judgment; and society a warm-hearted, genial, and generous member, whose life has been mainly devoted to the good of his fellow-beings.

Resolved, That we attend the obsequies of our deceased Fellow in a body.

Resolved, That we deeply sympathize with the family and relatives of the deceased.

Resolved, That the Corresponding Secretary transmit a copy of these resolutions to the family, the city press, and the medical journals.

C. C. HILDRETH, Chairman.

A. E. BELL, Secretary *pro tem.*

OFFICIAL LIST

OF CHANGES OF STATIONS AND DUTIES OF OFFICERS OF THE MEDICAL DEPARTMENT U.S. ARMY, FROM MAY 12 TO MAY 18, 1874, INCLUSIVE.

TOWN, F. L., SURGEON.—To proceed to Fort Sill, Indian Territory, and on arrival report by letter to the Commanding General Department of Texas, for assignment, so much of S. O. 96, c. s., A. G. O., as directs him to report in person, having been revoked. S. O. 105, A. G. O., May 13, 1874. Relieved from duty at Fort Preble, Me., S. O. 98, Mil. Div. of the Atlantic, May 14, 1874.

MCCLELLAN, ELY, ASSISTANT-SURGEON.—To take station at Louisville, Ky., and from that place visit the towns and localities at which cholera prevailed during the year 1873, as designated in instructions given him by the Surgeon-General. S. O. 103, A. G. O., May 11, 1874.

PATZKI, J. H., ASSISTANT-SURGEON.—Assigned to duty at Fort Fred. Steele, Wyoming Territory, S. O. 65, Department of the Platte, May 9, 1874.

HOLDEN, LEVI H., SURGEON (Retired).—Died at Vineland, N.J., on May 12, 1874.